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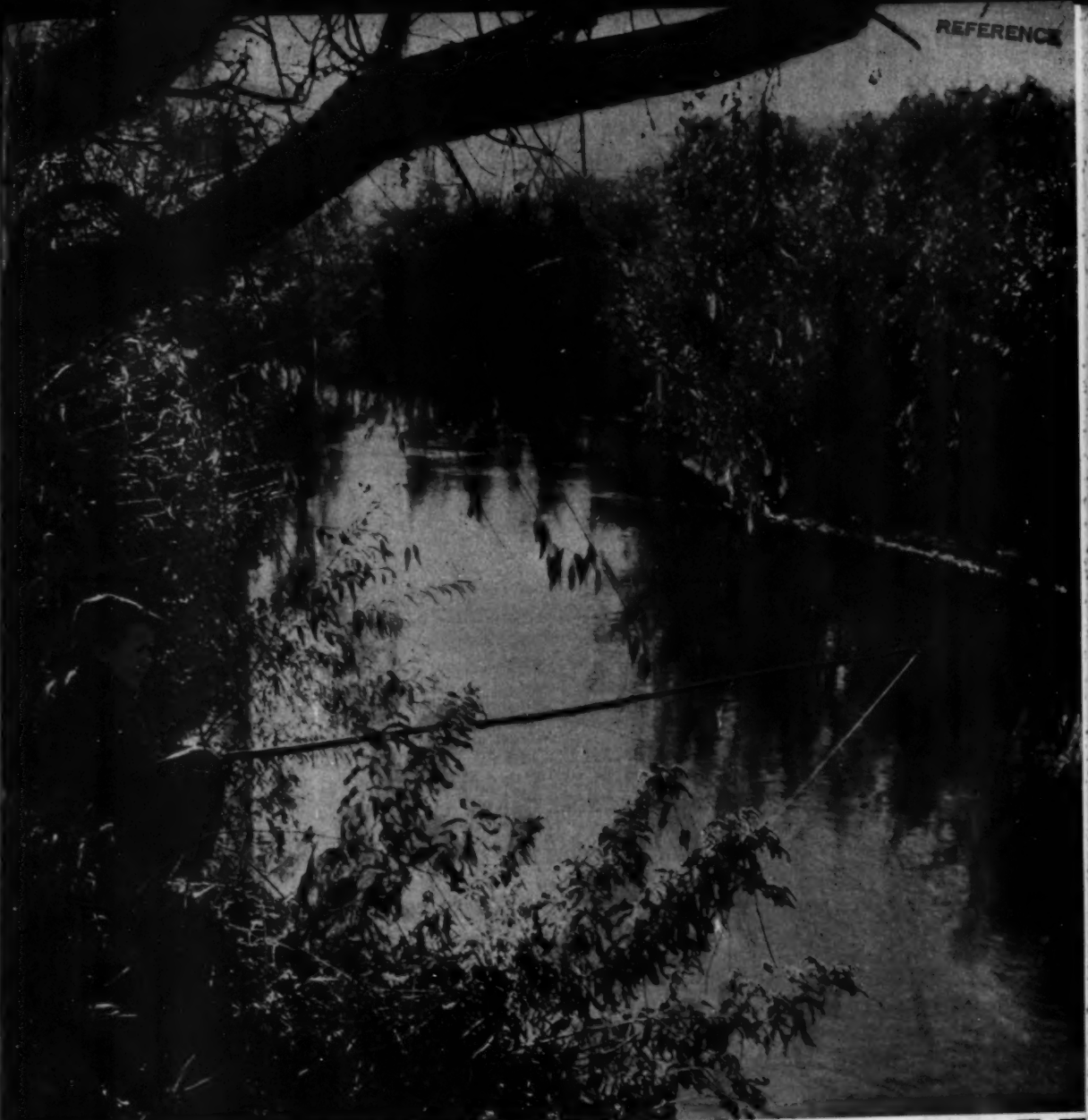
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SOIL CONSERVATION

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WELLINGTON BRINK EDITOR

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Front Cover: Wallace Moilien fishing in famed Coon Creek, Coon Valley, Wis. Banks vegetated by the Soil Conservation Service. This is a scene from the Service motion picture "The Heritage We Guard." Photographer: William R. Van Dersal.

SOIL CONSERVATION is issued monthly by SOIL CONSERVATION SERVICE of the United States Department of Agriculture, Washington, D. C. The matter contained herein is published by direction of the Secretary of Agriculture as administrative information required for proper transaction of the public business, with the approval of the Director of the Budget. SOIL CONSERVATION seeks to supply to workers of the Department of Agriculture engaged in soil conservation activities, information of special help to them in the performance of their duties. Copies may be obtained from the Superintendent of Documents, Government Printing Office, Washington 25, D. C., 10 cents a copy, or by subscription at the rate of \$1.00 per year, domestic; \$1.50 per year, foreign. Postage stamps, will not be accepted in payment.



"Land capability information is a reliable guide." This New York farm is being operated in harmony with Nature. The returning veteran will find many examples of how productive soils may be safeguarded for himself and his children.

SOIL CONSERVATION DISTRICTS AND RETURNING VETERANS

By MELVILLE H. COHEE

The land resources of our country have played a vital role in the war effort. They will play an equally important part in the peace to come. The returning veteran will have a large stake in what happens to our land.

The most vital institution for the conservation of soil and soil resources is the soil conservation district. Soil conservation districts—about 1,250 of them today—have a strong bearing on the future of veterans. The reason is simple: Under local farmer control, the districts have developed dynamic, long-time programs for conserving soil and water resources. At the same time, district programs are making it possible for farmers and ranchers to obtain larger yields under conditions compatible with physical land resources and the

economic opportunities of the moment.

District governing bodies pool their practical knowledge and experiences with the technical and research information of well-trained soil conservationists. Out of this emerge agricultural programs for local areas and watersheds within the districts, which surpass anything else of the sort that has developed in rural America during this century. The proof of such a sweeping statement is in the daily happenings on the some 3,200,000 farms and ranches within soil conservation districts.

Our armed services are today battling for just such democratic institutions as the soil conservation district. For the district is a democratic form of government—a local unit of government. Men who have been associated with soil and water conservation work as carried out through districts, and who are now in the army, the navy, and other branches of the military, write back that they want to see every effort made to keep the districts moving ahead. They want to keep them going now because of the war needs demanding in-

EDITOR'S NOTE.—The author is Chief, project plans division, Soil Conservation Service, Washington, D. C. For a discussion of soil conservation districts and their operation, see "Self-Governing Principles of Soil Conservation Districts," by Mr. Cohee, in *Soil Conservation*, December 1940.



Soil conservation districts will assist the veteran-farmer in the installation of needed practices.

creased food and fiber, but above that because of what they mean to the future of our country.

Today about one-half of the farms and ranches of America are within soil conservation districts. By 1950 it is quite possible that the bulk of all our good farm and ranch lands will be within districts. Many a returning veteran who goes directly into farming or ranching will find his land within either an existing or a soon-to-be-organized district. Still other veterans who go into industries will be affected materially, though indirectly, by what happens in the districts. As just one example, consider the man who will help to manufacture tractors, graders, and other dirt-moving equipment—items needed on an increasing scale because of the increased activities in conservation districts.

Let's look at the case of the veteran who prefers to go into farming or ranching for his livelihood, looking forward not only to economic security but to an environment favorable to bringing up his family. In this connection, it is appropriate to view the special responsibility of the district to the veteran, as well as to examine the opportunities which might normally be expected from district operations.

A sample inquiry made last summer of men in the army indicates that about one man in ten will leave the army definitely expecting to farm. Based upon this and other considerations, it has been

estimated that of the number of men in the armed services, between 900,000 and 1,000,000 will seek farms and farm employment. Of these, the survey shows, as many as 250,000 to 300,000 men do not have definite locations or farms in mind. An equal number know farms they think of renting or buying, but are not sure about.

This young man just back from the war may settle on a farm already owned or operated by members of his family. But more often it will be a farm about which he has little or no previous detailed knowledge. Suppose we examine both types of cases with regard to what the district has to offer the veteran:

1. The prospective farmer wants to know about the land in different parts of the community under consideration for his future home and business—the farm. Most districts have good information on the use capabilities of all land in the district. This means that soil types, degree of erosion, slopes and other physical characteristics of the different parts of the district are known in some detail. Lands in the same local area differ. Some are good for one use, others for quite a different use, and still others may be suitable for numbers of purposes. Land capability information is a reliable guide.

Furthermore, the governing body, usually known as district supervisors, has delineated the district into various sub-areas according to the

seriousness of soil and water conservation problems as a whole. The returning veteran, or prospective farmer, should take all these things into account in sizing up the quality of land in the different parts of his would-be future community. As a matter of fact, he may buy or rent a farm in a part of the district that is not the best so far as productivity and ease in the maintenance of soil fertility are concerned, because the purchase price or rental arrangements are favorable. Guidance, information and advice from district supervisors can go far toward insuring a square deal.

2. Information about land capabilities not only will offer a guide to the relative merits of different parts of the district, but will afford basic facts as to what specific uses should be made of the land. The suitability of the land for crops, pasture or



"Hundreds of pieces of heavy earth-moving equipment will be needed . . ."

woodlands is readily known through study of such information. Furthermore, the degree of intensity of use of the cropland and its probable production capacity can be established. Some lands can be in row crops more often in a given period of years than others. With prescribed soil and water conservation practices, however, this situation may be somewhat modified. The district has recommendations for each use capability category and the veteran can judge for himself what it will take to keep the land productive and at the same time grow crops suitable to the type of farming adaptable in the community.

The prospective veteran-farmer may have a definite preference as to the type of farming he prefers. He may seek dairying. He may want, for example, to be a corn-hog farmer, or to specialize in beef cattle, or sheep. It is equally essential to have this information about the land if he wants to operate a general or diversified type of farming business. In many, many cases, the serious erosion problems on the land or the low farm family incomes for the year's labor result because the type of farming being carried on is not in harmony

with the various capabilities of the land making up the farm itself. District supervisors can help the returning veteran to avoid these pitfalls.

The agricultural extension agent of the county, along with other professional agricultural workers, can give the veteran much information on livestock, equipment, farm labor, and a host of other needed matters bearing on the final selection of the farm. Needed facts on purchase contract, settlement or rental arrangements can be supplied from the same source. A veteran's advisory committee has been established in virtually all counties of the Nation for providing general advice to agriculturally inclined veterans. Furthermore, the Veterans Administration has designated these committees as a local point of contact for veterans desiring advice prior to applying for a farm loan guaranty under the Servicemen's Readjustment Act of 1944. It can not be emphasized too much, however, that the physical aspects of the land are extremely important, and the soil conservation district can make a valuable contribution to the returning veteran in this direction.

3. Not only is it important to get the right farm, suitable to the desires and aptitudes of the veteran, but also to maintain that farm in the most productive state year after year. There is rarely a farm that does not need some soil and water conservation practices. Whether few or many practices are needed, the soil conservation district stands ready to serve the owner and operator. Assume the district has helped the soldier, or sailor, or merchant marine, as the case may be, in the selection of his farm, is it not going to help him take care of it? Even if it did not help him in the selection, the district stands ready to assist with conservation problems.

What can the district do for the veteran on conservation? Among other things, it can furnish him (a) a map of his farm showing the land capabilities of each acre, (b) recommendations as to proper land use—crops, grazing land, woodlands, and so on, (c) technical services on the farm in connection with determination of specific need for and location of different soil and water conservation practices, such as, terraces, strip-crops, drainage, management of irrigation water, grazing management, farm woodland planting, management and harvest-cutting; and the use of odd areas for wildlife and the development of farm ponds, looking toward future hunting, trapping, and fishing for the veteran and his family. Furthermore, as the veteran-farmer installs such practices the district will provide the services of a technically

trained soil conservationist to help in their installation. Maintenance of practices is important, and the district can help on this too.

All this is for the veteran who will take up farming or ranching as a livelihood. Second, let's see what the district can offer the veteran who does not care to become a farmer. For the man who has been handling equipment in the armed services, there's comparable work in the districts. There is need for terraces or diversion ditches on nearly 100 million acres. Many farmers will prefer to do this work themselves, using their own equipment. However, many prefer to hire it done because their own equipment is not adequate or already is serving to its full capacity on other farm tasks. The veteran who obtains the needed equipment can contract with the district or with individual farmers to do terracing and diversion work. He might even have several units of equipment constantly busy on this type of work in a single district—a full time occupation. If he farms some for himself, he might arrange to do a sizeable amount of custom work for his neighbors.

This same field of opportunity exists in connection with many other soil and water conservation practices. Let's look at some of the conservation practice needs: soil saving dams—376,000; development of stockwater facilities (springs, farm ponds, and the like)—1,200,000; drainage for around 30,000,000 acres, approximately two-thirds of which involves the repair and rehabilitation of existing drainage systems; streambank erosion control on nearly 1 million acres along creeks and rivers; improvement of farm irrigation systems on over 11,000,000 acres; small and large structures to control or heal thousands of gullies in fields and grazing areas. Hundreds of pieces of heavy earth-moving equipment will be needed to get the conservation practices carried out. Even where conservation districts themselves may own equipment, they will need skilled operators. The veteran who can not or does not choose to own equipment, may find gainful and steady employment in operating and maintaining this equipment.

The soil conservation district programs are, by no means, exclusively of a mechanical or structural nature. In fact, in a majority of cases the conservation measures essentially involve vegetation. It is entirely reasonable to assume that the returning veteran may wish to get in on these. He may wish to enter the seed business. Thousands of pounds of grass and legume seed are now being used each year that were not used before, in order to have the right soil and water conservation practices.

Likewise, there is an opportunity in the production of woody type plants—the nursery business. Much of our present cropland, in fact more than 40 million acres, should be retired to pasture or woodland use. This means a big demand for seed and nursery planting stock.

What about the veteran who chooses to embrace the public service? Soil conservation is one of the newest of all applied agricultural sciences. A comprehensive, scientific, action effort has been going on for at least a dozen years, and will undoubtedly expand after the war. The basic, guiding principle can be stated as follows: Effective prevention and control of soil erosion and adequate conservation of rainfall in a field, on a farm or ranch, over a watershed, or on any other unit or parcel of land, requires the use and treatment of all the various kinds of land comprising that area in accordance with the individual needs and adaptabilities of each different area having any important extent. Such a promising field, drawing heavily on manpower and other resources, offers a professional life work for many of the men now in the armed services.

Farmers generally, and especially soil conservation district governing bodies, realize that the installation and maintenance of many soil and water conservation measures pose problems somewhat more complex than they can handle alone. Farmers cannot be expected to solve all their erosion-conservation problems without professional assistance. And right now there is a shortage of qualified soil conservation technicians.

Returning veterans will offer one of the most fruitful groups from which to recruit and train new, qualified technicians. By the second year after the war is won probably 3,000 new men in this field of work can be employed and trained. Each year thereafter, the Soil Conservation Service could absorb an additional 1,500. By the twelfth year, at such a rate, there would be 20,000 trained technicians on the job. Related fields of endeavor in research, education, and vocational teaching will undoubtedly call for expansion, and here again are opportunities for returning veterans.

Soil conservation districts, through which much of the needed soil and water conservation work in our Nation will be carried out, require the services of returning veterans. The science of soil conservation can be furthered by veterans. Thousands of returning veterans, in turn, will have their futures benefited one way or another by the conservation of soil and soil resources and the prevention and control of soil erosion.

DISTRICT PROFILE

MEET JIM SKINNER OF MICHIGAN



"They told me I was outside the project boundaries. But I was stumped, and something had to be done. We went to the county agent, and he sent us to the project man. The project man started to send us back to the county agent—that's where I balked.

"We had them send some state men down here, and we thumped some heads together to get action. 'The state men admitted that Jim was a little rough, but they were just as anxious as he to see the farmers take action.' So we got a district in here, and it's one of the greatest things that's happened to our community."

Skinner is a big man, standing six feet two and a half, with broad shoulders, long arms, and big hands. After you talk with him, you're sure he has a big heart. Some say his tongue can be as sharp as a Michigan wind in winter, but his sincerity and friendly smile are warming. When asked about his nationality, Jim says, "I'm genuine American," which he certainly is. His speech, however, has a slight tang of old Scotland.

A graduate of Michigan State College in 1901, Skinner became one of the nation's farm institute county agents (Kent County, Mich.) in 1912. He was a state farm institute leader for 6 years, managed a number of farms including a several thousand-acre ranch in Montana, and for the last 15 years has operated a 690-acre farm owned by newspaperman H. S. Booth.

During the war he and one other man are doing all the work on the farm. They can do it because the inventive Skinner has rigged up a lot of labor-saving and time-saving devices in his own farm shop. His one son, Pfc. Joseph Skinner, is a real G.I. Joe with the infantry in Texas. Jim hopes he returns to the farm after the war.

Jim's greatest pride is the work of the soil conservation district. He calls farmers in the district "stockholders," and in carrying out soil conservation practices they are building up their "reserve assets."

It was his idea that the 1943 and 1944 annual reports should carry a "table of values" of work done. That table for 1944 evaluates soil conservation work completed during the year by 200 co-

(Continued on page 254)

Jim Skinner is a hard-fisted, gruff-voiced Michigander whose 69 years of farm experience have made him a champion of the farmer's cause. That's why the directors of the Fenton Soil Conservation District in northeast Livingston County, Mich., have elected him their chairman five years in a row. He hasn't missed a single meeting in those five years.

How did he get started in district work? Let Jim tell you.

"One spring I planted corn three times on the steepest field on the farm and the doggoned rains washed it out every time. I had heard about the Fenton erosion control demonstration project, so I says to two of my neighbors, 'Let's go over to see those boys and get some help.'



Three-year-old pasture first season after reworking.

A Business Man Looks at Part-Time Farming

By R. E. BELL

As Told to J. A. Johnson

It is natural for a business or professional man or skilled worker to turn to the land. He also is a land creature. He never frees himself of dependence on the land no matter how he surrounds himself with concrete and steel structures or modern gadgets. He is fed by the land, clothed by it, and usually sheltered by it. He seldom if ever loses his yearning for direct, successful contact with the soil. This inherent desire frequently

becomes strongest when he has achieved success in business, profession, or occupation, and has some leisure time on his hands. Then he may buy a farm as an investment or hobby.

Too often, however, the farm proves to be neither a good investment nor a satisfactory avocation. It may be a drain on other earnings, and its recreational value largely lost. Frequently this is due to improper land use and soil erosion.

EDITOR'S NOTE.—Mr. Bell is a business man and part-time farmer of Mendenhall, Miss. Mr. Johnson is district conservationist, Soil Conservation Service, Mendenhall.

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Wild winter peas build soil and furnish cheap winter grazing on the author's farm.



The wild winter peas also produce a seed crop. This 9-acre field made 1,800 pounds of seed the first year, after being grazed about four months.

As a nation we are realizing that many tenants and landlords, including the business or professional man or the skilled worker who owns land, actually have been miners rather than farmers. Although business and professional men, and sometimes skilled workers, usually are more able to withstand losses than the average farmer, there is no more reason for them to use shortsighted and wasteful farming methods than to use shortsighted and wasteful merchandising or working methods.

Much is said these days about a future type of part-time farming. Post-war planners assert that many semi-skilled factory and office workers must keep "one foot on the land" in the America of tomorrow. They advise this group to live on small farms while working in nearby factories or offices. This, they say, will relieve housing short-



Treated fence posts from thinnings in young pine stands. The author figures his fencing problems will be solved if these posts last 10 years.

ages and provide additional income and healthful living conditions.

But of all farmers, the part-time farmer can least afford soil erosion and low yields. I feel keenly on the subject of soil conservation, because what I have learned during the past two years about sound conservation methods seems equally applicable and essential to the full-time and the part-time farmer.

Several years ago I bought a local business establishment, borrowing most of the money for the transaction. It required several years of slavish work to meet payments and keep the business growing. These years emphasized the importance of making each department carry some measure of the load in order that one might not fail and endanger the whole. The smaller the business and the operational margin, the truer is this fact. And so it is, it seems to me, with part-time farming. Each acre, each crop, each undertaking should carry much of its own burden, because a small amount of dead weight can soon drag a small farm under.

This fact was proved, in my case, when I began to find some leisure. I owned three plots of land, and it was natural that farming should claim my attention.

One plot of 11 acres provided a home site, a pasture for milk cows, and a small garden.

Another, a farm of 153 acres, provided a place to run native cattle obtained through business trades. Much of the farm was woodland, heavily cut over by former owners. The cattle roamed the woods and I tried to grow winter feeds on three small fields and on some rented land. I grew oats and corn for grain, and soybeans for hay. The oats did fairly well, but the corn and soybeans were poor. Each winter I found the cattle in fair condition, but with a short feed supply and little prospect for winter grazing. Many cattle died or were sold at a loss. The third tract consisted of cutover longleaf pine land which has since been sold and the money invested in land more suitable to my needs.

I was willing for a while to charge losses to recreation, but I saw that this could not be continued.

Two years ago I started a fish pond on the 11-acre home place. Needing advice on new construction and management techniques, I went to the Simpson County Soil Conservation District office. I was not a district cooperator but the local Soil Conservation Service technicians helped several afternoons after work. Their suggestions proved

worth while, so I requested assistance on the 153-acre farm, and helped to organize my neighbors into a conservation group in order to obtain assistance.

A conservation plan was written for the place on December 11, 1943. The technician convinced me that the farm should be developed as pasture for winter grazing crops, and as woodland, because it was better suited for these uses than for row crops. He suggested also that the rented land be planted to grain and hay crops.

During the first year (the technicians helped me get some of the work started before the plan was written) about 20 acres were planted with white Dutch clover, Dallis grass, and annual lespedeza for permanent pasture. Nine acres of wild winter peas were planted for winter grazing. About six acres were planted to oats and crimson clover for winter grazing; seeded later to white Dutch clover and annual lespedeza for permanent grazing. These new pastures and grazing crops carried cattle through the first winter with little loss. Twelve native cows and calves were sold in the spring of 1944, and the money was put into registered and grade Herefords. The entire herd entered this winter season in excellent condition. In addition, 900 pounds of white Dutch clover seed and 1,800 pounds of wild winter pea seed were harvested from these pastures and fields the same spring.

Poor quality trees in the cut-over woodlands offered poor post materials for fence repair and construction. At the suggestion of district personnel, young pine stands were thinned enough to yield about 100 peeled posts. These were chemically treated and have been tested in fence lines for about a year. Some 1,500 posts are being treated now as they are obtained from thinnings and the cleaning of pasture.

First-year pasture. Only top-notch pastures are economical on part-time farms.



the 153. Pasture development for erosion control around
neighbor the fish pond at the home place increased grazing
tain as to such an extent that two milk cows could not
he place keep up with it so now I often put newly pur-
onvinced chased beef cows there for observation and to give
pasture them a boost.

and, be This is only a start, but progress has been grati-
than for fying all the way along. The most startling results
ted land came in 1944 on the rented land where conserva-
tion methods also were used. This plot consists of
elped me about 48 acres of fair bottom land. Oats were
lan was seeded the preceding fall on 34 acres and over-
h white seeded in the spring with Kobe lespedeza. More
lespedeza than 1,000 bushels of oats were combined from
l winter this part of the field. I put up 500 bales of oat
about six straw for bedding from a light raking where I
over for planned on saving lespedeza hay. I saved 1,200
h clover bales of excellent hay, leaving 6 acres of lespedeza
grazing, to mature. More than 3,000 pounds of combine-
carried run seed were harvested from the 6 acres in the
le loss. fall. The rest of the field was in corn, which did
in the well to yield 10 bushels per acre. The corn land,
o regis by the way, received more fertilizer and more
e herd work in proportion, than did the rest of the field.

ndition. Since seeing these results I have bought a fourth
er seed plot of 303 acres. A conservation plan will be
d were written for it shortly. If these soils are suited to
e same oats and corn for grain, annual and perennial
hays and seed crops in rotation, then I shall have
no further need for the rented land.

odlands If conservation methods can turn second-rate
air and fields into pastures which hang solid meat on
ct per rugged frames; if good management can improve
ough to abused woodlands and provide good posts from
chemi worthless stock; if conservation practices can
lines cause four crops to grow where one low-yielding
being crop grew before—improving the land rather than
nnings depleting it—then these economic advantages
alone seem ample recompense. But when I add
onomical recreational advantages derived from pleasant
work and the wholesome sports of fishing and
hunting on my own land, when I consider the
energizing effects of clean, unharassed, outdoor
work; when I experience the moral uplift derived
from pleasing contact with the land, the total, to
my way of thinking, is satisfying to the highest
degree.

The conservation principles underlying what I
have done on my own land have been applied ex-
tensively during the past years by many full-time
farmers, especially where assistance from soil con-
servation districts is available. It is true that it
sometimes takes several years for a full-time farm-
er to put a complete soil conservation program

into effect because of limited resources. But plans
made with help from district technicians are devel-
oped so they may be carried out in five years, and
if more time is needed, district assistance can be
extended. Those part-time farmers who have few-
er resources than active business men-farmers may
find that several years are required to establish
conservation practices; but all such farmers must
use these methods if they are to avoid failure.

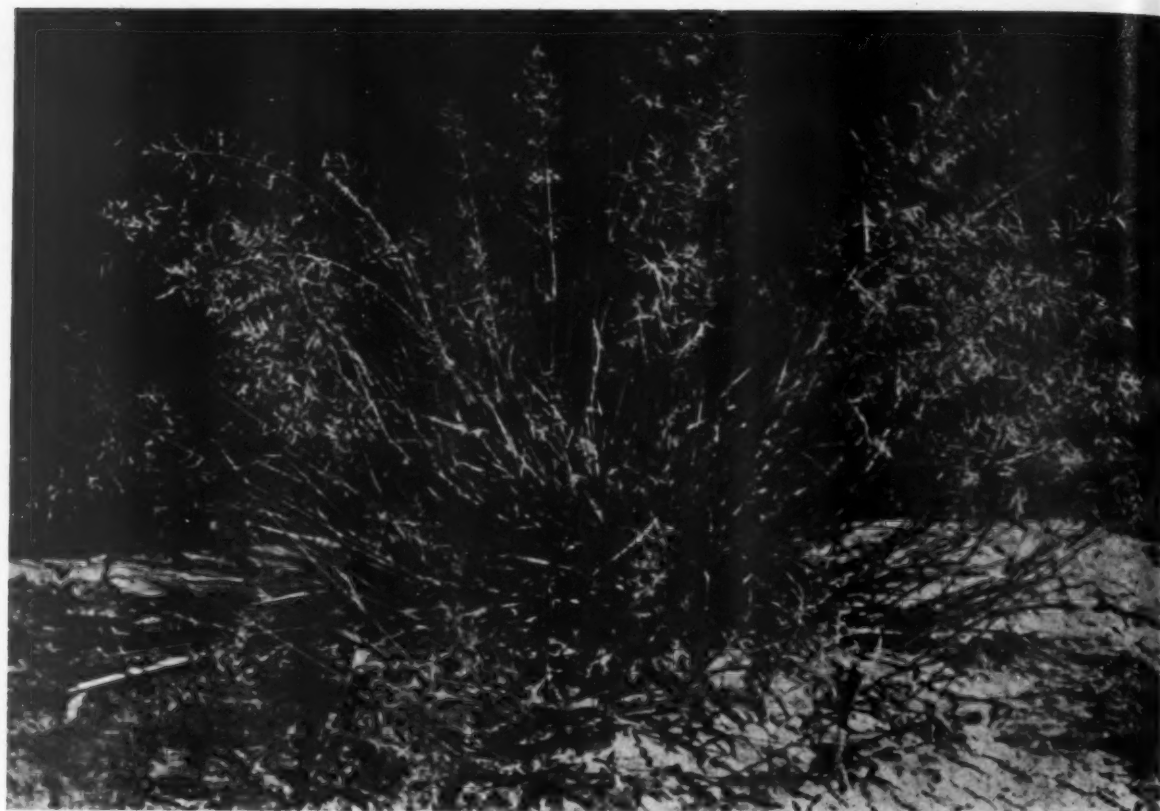
Failure, even indifferent success, quickly robs
part-time farmers of every return the land offers
—economic, physical, and spiritual. Soon they
become doubtful, then fearful, then thoroughly
beaten and disgusted. I know from experience that
a part-time farmer can lose his feel for the land,
vowing to turn his back upon it.

Successful part-time farmers, however, obtain
benefit from profitable operations, no matter how
large or how small. They receive satisfaction from
anticipation of additional present and future se-
curity. Seasonal monetary returns reinforce their
fortitude as well as their pocketbooks. Part-time
farming may be an excellent substitute for costly
sports. Last but not least, it broadens spiritual
life through its satisfying contact with the earth.
Successful farming is a moral stabilizer.

There is truth in the proposition that part-time
farming has post-war potentialities. But I am
convinced that these can be realized only where
conservation methods are used. It is foolish to
suppose that conservation farming guarantees
complete success, but it can provide insurance
against complete failure. My thesis is this: Every
agricultural organization, group or agency, and
every manufacturer, banker and merchant, and
every minister of the gospel, should help to antici-
pate and solve the problems peculiar to part-time
farming. A definite cooperative program may save
many part-time farmers from ruin or the wither-
ing disappointment that ensues from failure.

Planning *now* is needed to save thousands of
acres of land from mismanagement and possible
destruction. It seems to me that soil conservation
district supervisors and the personnel of the Soil
Conservation Service have a heavy responsibility
here, and that the rural life movement ought not
to overlook this opportunity to safeguard both
soils and souls.

It is conceded that *all* farming should be conser-
vation farming. In my opinion, part-time farmers
owe it to themselves to take advantage of all avail-
able technical assistance. The sooner this is done,
the better for the farmer himself, the land he
works, and the community of which he is a part.



Lehmann lovegrass.

Arizona's Wonder Grass

By ROBERT V. BOYLE

Most of us have read John Ingalls' "Grass." It's a masterpiece of writing. Aside from vividly pointing out how important grass is, it makes the fellow who doesn't have any feel bad. Arizona, though, has an "up and coming" grass that is a wonder. In a few years, practically anyone in the recognized ranching areas of southern Arizona can have grass.

Lehmann lovegrass is an introduction, like filaree, except that filaree got here by accident, and bringing the grass in was premeditated. This grass is to the hot and semi-arid part of Arizona what crested wheatgrass (introduced from Siberia) is to Utah, Colorado and other states north and east of us. As a downright valuable forage grass and

as a plant to hold the soil, Lehmann lovegrass is bound to be recognized more and more in the next few years. For these purposes, the South has kudzu, lespedeza, Rhodes grass, and the well-known Bermuda. It is fortunate that Arizona, too, has its wonder grass.

A small amount of seed of Lehmann lovegrass was obtained from the Union of South Africa through the Division of Plant Exploration and Introduction of the Bureau of Plant Industry. First plantings were made under irrigation on the Soil Conservation Service nursery at Tucson in 1934. These initial trials were so promising that larger seed-increase plantings were established in 1935 and succeeding years, and good crops of seed have been harvested each year. Adaptation trials have been made on representative range areas throughout the Southwest. It has been found that the grass dislikes cold winters and thrives only in a

EDITOR'S NOTE.—The author is regional chief of operations, Soil Conservation Service, Albuquerque, N. M.



Contour planting of Lehmann lovegrass in Southern Arizona.

mild climate where the temperature seldom gets below 15 Fahrenheit.

The accompanying picture gives an indication of the general appearance of the plant. It produces a luxuriant growth of leafage and seed. Cattle don't like it quite so well as grama when the latter is green. However, it greens up earlier and stays green longer than does grama, and therefore fits well into the picture. When growing along with browse, Lehmann lovegrass is relished by cattle and horses. It ranks along with grama and other common grasses as far as nutritive value is concerned.

The chief virtues of Lehmann lovegrass are:

- (1) *Ease of establishment* It can be planted successfully where native grasses either fail to come up or are "rubbed out" by adverse conditions.
- (2) *It isn't choosy about soils.* It seems to do about as well in sandy soil as adobe soil; rocky ground as alluvial valley.
- (3) *It is drought-resistant.* Even small seedlings pull through dry spells when native grass seedlings curl up and quit the game.
- (4) *It reproduces well.* Millions of viable seed are produced which can and do result in a

fairly rapid spread. (5) *It stays green over a longer period of time than do the native grasses.*

These statements aren't made solely on the basis of the adaptation trial plantings mentioned above. This grass has passed even the field trial stage. Several years ago it was planted on 10 or 15 acres of slick bare ground at a windmill on the Babacomari grant belonging to Frank Brophy. It is definitely still there, doing well, spreading and being eaten. On the new highway between Benson and Willcox, Lehmann lovegrass is "taking over" the right-of-way. On Rancho Sacatal, near Douglas, W. E. Hollard had a strip of creosote brush ripped up and planted to the "wonder grass." The site was sloping, rocky, hot, dry, and devoid of all cover except for the brush. In a year's time it looked like a wheat field. Near Apache, in the southeast corner of Cochise County, Lehmann lovegrass has been holding down some abandoned dry farm land for the past several years. These are just a few samples. Similar results have been obtained on other ranches and highway rights-of-way.

Under what conditions will the planting of Leh-

mann lovegrass pay off. It does well practically anywhere that grass is sparse or non-existent and where the terrain is such that seeding equipment can be used. There are millions of acres where there is very little grass and where the only perennial vegetation is creosote bush, mesquite, black brush, burro brush, and the like. There are also many thousands of acres which once supported good stands of grama, but which, for one reason or another, now have little. While reseeding of grama on the plains of eastern New Mexico and Colorado is physically possible and economically feasible, the undertaking in southern Arizona is very hazardous. Lehmann lovegrass seems to be the answer on the semi-desert browse areas and on the denuded grasslands. How much country such as that just described is there in the upper half or two-thirds of such valleys as the San Simon, the San Pedro and the Santa Cruz, and in the Sulphur Springs Valley? What rancher having such lands wouldn't welcome more grass? Take, for example, the stretch of country (I don't know to whom it belongs) north and east of Douglas on either side of U. S. Highway 80. For several miles out of Douglas on the way to Silver Creek, Lehmann lovegrass has been planted in the highway right-of-way. It's there to see, and it looks good. Outside the right-of-way, while there may be an occasional patch of tobosa grass, mesquite or creosote bush are the principal plants, with bare ground intervening. If this bare ground were in lovegrass, the carrying capacity would be increased several hundred percent.

Everyone recognizes the importance of having a well balanced range; that is, one which isn't all browse or all grass, but one which has both browse and grass. While opinions may vary, few will argue that two-thirds grass and one-third browse isn't just about ideal. Throw in some spring annuals like filaree, and it's hard to beat. Of course, not all brush is forage—creosote isn't. But who's going to kick about the grass part of it if he doesn't have it now but could get it? Another important consideration is that browse alone doesn't, as a rule, hold soil erosion in check. Grass does the trick.

Now, while this lovegrass is a tough customer and can take some hard knocks from the weather and from grazing, too, on occasion, it's just like any other living plant. It can't be kicked around. Reliable information on its proper degree of use is lacking, but it's probable that no more than 40 percent of its annual growth should be grazed off. In other words, while it's undoubtedly a wonder grass, it isn't supernatural!

To get best results in planting, ground preparation, such as ripping or disking, is necessary. A shallow, firm seed bed is desirable. Seed can then be broadcast or drilled in. Best results are had with a seed drill followed by firming the ground with a cultipacker. Very good stands have been obtained, however, by simply ripping the ground, broadcasting the seed, and then forgetting all about it.

Where the average annual rainfall is 12 inches or better, solid seeding is feasible; and even where the rainfall is less, solid seeding can be done in flood plains. In case rainfall is below 12 inches and the planting is to be on other than flood plains, it is best to plant in furrows on the contour. Furrow spacing can be anywhere from 10 feet to 50 feet, depending on soil texture and steepness of slope. If, later on, it should prove to be that there is enough moisture between the furrows to accommodate more grass, the matter will be taken care of by natural reseeding from the furrow plantings. Where the problem involves "slick," bare ground, the process can be speeded up by breaking out new furrows between the old ones.

In some places, rabbits can really make a new small planting look sick, so the surest way of getting around them is to plant enough acreage at one time so that the rabbits and even grasshoppers can have some and still leave enough to grow beyond the seedling stage and survive.

Cost of planting depends on what equipment you have or can get, on the accessibility of the area to be planted, on the kind of soil, the amount of brush and a few other factors. Under average conditions, however, it shouldn't cost more than \$1.50 per acre for contour seeding, and \$3.00 for solid seeding. The cost may prohibit solid seeding except in the very best sites. No claims with respect to carrying capacity are being made, because it must be appreciated that Lehmann lovegrass is new in this country. On poor sites the figure will certainly be less than for good sites. In alluvial bottoms subject to natural flooding, it would not be surprising if 20 acres supported a cow year-long.

Unfortunately, there are bottlenecks right now which are impeding a greatly expanded rate of planting. The first one is scarcity of seed. Plantings to date have been with seed raised in Soil Conservation Service nurseries. Owing to the war, commercial seed houses and farmers have not gone in for raising this relatively untried plant for seed. Seed production is not difficult, however.

(Continued on page 249)



By JAMES E. SMITH, JR.

Female buffalo grass plant, showing clusters of seed burs about three inches above ground surface.

Buffalo grass is one of the most important native grasses used in soil and moisture conservation work throughout the Great Plains from central Texas to North Dakota. But seed of buffalo grass is hard to harvest and expensive to buy, and field stands from moderate rates of seeding have been uncertain in the past.

Until about 1940, it is doubtful that more than 5,000 pounds of buffalo grass seed had been collected altogether. Since that date, many methods of collection have been employed by the Soil Conservation Service and a small number of private individuals with such increasing success that an estimated 100,000 pounds of clean buffalo grass burs were obtained in the fall and winter of 1943-44. Even so, seed prices ranging from \$1 to \$2.25 a pound still delay planting of many areas needing buffalo grass for erosion control.

As commonly handled and marketed, buffalo grass "seed" consists of a small, hard, nearly-waterproof bur, which may contain from 1 to 3 or 4 good seeds.

EDITOR'S NOTE.—The author is manager, Soil Conservation Service nursery, Woodward, Okla.

Outlook Improves for Buffalo Grass

Thanks to Gordon L. Powers of the Soil Conservation Service nursery at Woodward, Okla., who has devised a method whereby each pound of buffalo grass burs can be made to yield about 8 times as many seedlings as it formerly could, high prices for buffalo grass seed need no longer stand in the way of more widespread use of this excellent grass.

The 40-year-old Powers set out to find a way to get more seedlings from each pound of burs. He came up with an idea so simple that at first I hesitated to let him try it, with seed so badly needed in revegetation work. "Run the burs through a hammermill," he suggested, "and clean up the material in an ordinary fanning mill."

Finally I okayed a trial of Powers' idea, and reluctantly turned over to him a small quantity

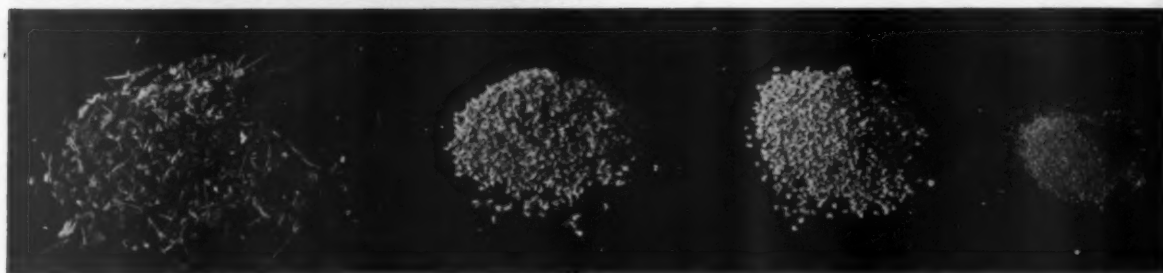


Gordon L. Powers at the hammermill used to remove awns from seed burs, and to produce pure, hulled buffalo grass seed from ordinary burs. The chamber at the lower part of the mill was designed by Powers to render mill operation practically dustless.

on 3 square feet, while one pound of hulled buffalo grass seed an acre will give 5 to 6 seedlings on each square foot of land.

Stated another way, these figures mean that to reach a planting rate of about 5 seedlings a square foot, which is considered ample for buffalo grass, a farmer or rancher can sow the hulled seed from 5 pounds of burs, instead of 40 to 50 pounds of burs. With seed at \$1 a pound, the saving would be \$35 to \$45 an acre, although it's doubtful if anyone would spend that much to establish an acre of buffalo grass. With Powers' process buffalo grass can be seeded cheaply enough to make its use widespread.

The cost of hulling and cleaning buffalo grass seed, according to Powers' work, has averaged about 10 cents for each pound of clean seed. The hammermill used by Powers seems to be especially well suited for the work, but it is believed that



Buffalo grass seed. Left to right: combine-harvested seed material, clean burs as usually marketed, burs processed in hammermill to remove awns, pure seed obtained by breaking up burs in hammermill.

of buffalo grass burs collected for distribution to landowners establishing conservation practices in cooperation with Texas and Oklahoma soil conservation districts. Powers' idea worked like a charm, and the seed wasn't wasted.

We found that approximately 5 pounds of clean burs would yield 1 pound of clean, hulled seed. Untreated burs will germinate about 8 to 15 percent in 14 days, the period of time after planting during which most of the effective seedling emergence occurs, and will produce about 4,000 to 7,500 sprouts a pound. Hulled buffalo grass seed will germinate 70 to 75 percent in 8 to 12 days, and will produce around 240,000 sprouts a pound. These figures mean that a planting of 5 pounds of untreated burs an acre will result in 2 seedlings



James E. Smith, Jr., nursery manager, weighs in a sack of newly harvested, freshly cleaned buffalo grass burs.

other makes and types can be used just as satisfactorily if proper screen sizes are available and careful speed adjustments are made. It is essential to break down the burs completely in order to free the individual seeds, but without damaging the seeds themselves.

A word of caution should be added regarding the use of hulled buffalo grass seed. Rates of planting such seed seldom will exceed one-half pound an acre, and ordinary seeding equipment such as grain drills cannot be adjusted for such a low poundage. Also, hulled buffalo grass seed cannot be mixed with chaffy blue grama, side-oat grama, or other similar seed material without

danger of having buffalo seed sift to the bottom of the hopper and be planted first. Sorghum or corn chops can be graded to size and mixed with the hulled buffalo grass seed for planting in a regular drill.

To meet the need for special equipment to sow these small seed at very low rates, the nursery at Woodward has developed a drill hopper which will accurately plant not only hulled buffalo grass seed, but also other small-seeded grasses such as weeping lovegrass, sand lovegrass, and panic grass.

With these two developments the problem of revegetating Great Plains land for erosion control is a long way toward solution.

ARIZONA'S WONDER GRASS

(Continued from page 246)

On good irrigated farm land, yields of from 200 to 400 pounds of seed to the acre can be expected. Seed can be harvested and cleaned readily with a small combine. If a combine is not available the crop can be cut with a binder and laid in windrows, left for a few hours and then picked up carefully with forks and thrown into a tarp-lined truck and hauled to a stationary thresher. When one considers that there are 7 million seeds to the pound it readily can be seen that a small irrigated acreage devoted to seed production would result in a tremendously greater amount of range land being planted. Because of the smallness of the seed and its high viability, it only takes about 1 pound to plant an acre of range land.

One rancher in southwestern New Mexico, who believes the grass has great possibilities, has several acres of it under irrigation. He intends to raise seed and plant it on his range land. When planted for seed production on irrigated land, the grass can be drilled in rows and cultivated, or sown broadcast. As Lehmann lovegrass is a warm-weather grower, spring and summer are the best times for planting. Seed-increase plots should be established on clean land, free of Bermuda and Johnson grasses. Although considerably more production can be obtained from irrigated seed-increase plantings, good seed crops have been produced from range planting and are often worth harvesting.

No one should get the idea that Lehmann lovegrass will transform the desert. In the triangle cornered roughly by Kingman, Yuma and Ajo, there is a lot of country and scenery and not much else. Even here, though, it wouldn't be surprising if the "wonder grass" should do well on flood plains.

BENNETT HONORED IN COSTA RICA

From Costa Rica comes the report of a conference held recently at the School of Agriculture of the University of Costa Rica in honor of Dr. H. H. Bennett, chief of the Soil Conservation Service. Distinguished guests included the cultural relations officer; H. Gordon Minnegerode, the second secretary in charge of the economic section; Dr. Theodore J. Grant, director of the rubber experiment station at Turrialba; and Grover C. Kincaid of the food production division of the Institute of Inter-American Affairs. The conference was organized by Sr. Luis Arturo Fernandez, who was awarded a grant by the Department of Agriculture to study soil conservation methods in the United States. In addition to the aforementioned members of United States government agencies, the conference was also attended by the dean of the School of Agriculture, Ing. Fabio Baudrit, and the members of the first class to finish a course in soil conservation under the tutelage of Sr. Fernandez.

Sr. Fernandez and Dean Baudrit made addresses in which they emphasized the importance of soil conservation to Costa Rica, and expressed their appreciation to the United States government and to Dr. Bennett for making it possible for the University of Costa Rica to establish a course in soil conservation at the School of Agriculture. The valedictory was delivered by one of the students, Sr. Jose A. Torres.

In the Catawba Soil Conservation District, S. C., during the month of March, farmers planted more than 500 pounds of bicolor lespedeza seed to establish wildlife borders on unproductive margins between crop fields and woodlands.

LUMBER INDUSTRY WELCOMES CONSERVATION FORESTRY FARMERS



Col. W. B. Greeley, secretary-manager of West Coast Lumbermen's Association, presides at Snohomish farmers' tree farm dedication dinner. At his right is Charles L. Tebbe, assistant regional forester of the U. S. Forest Service, Portland; at his left, J. H. Christ, Pacific Coast regional conservator, Soil Conservation Service.

By ALBERT ARNST

Importance of conservation forestry on small farms now stands officially recognized by the practical-minded western lumber industry as 17 farmers in Washington's Snohomish Soil Conservation District display neatly framed American Tree Farms System certificates to prove it.

First farmers with small woodland holdings to be accepted into the industry's still new organization for promoting conservation forestry in general, all 17 are members of the Washington Forest Products Cooperative Association. (See *Soil Conservation* Dec. 1940, page 153.) The co-op was formed 5 years ago to enable its members to harvest their trees as a "crop" and to market their comparatively small individual amounts of timber products efficiently and profitably.

More than 9,000,000 acres already have been certified as American Tree Farms, on the West Coast and in the South. The welcoming of the Snohomish County farmers into the tree-farms ranks was hailed as a step of greatest significance, by farmers, foresters and industry leaders who took part in a big dedication dinner meeting sponsored by the Snohomish County Chamber of Commerce at Monroe. The farmers' certification was termed by Chief Forester E. H. McDaniels of the

EDITOR'S NOTE.—The author is forestry specialist, Soil Conservation Service, Sedro-Woolley, Wash.



Typical conservation forestry harvest cutting on a Snohomish Soil Conservation District-Washington Forest Products Cooperative Association farm.

coastal industry's Joint Committee on Forest Conservation as a "new landmark of industrial forestry."

Colonel W. B. Greeley, secretary-manager of the



Getting out war-needed piling with a light tractor on James Eadon farm near Monroe, Wash. By handling his sales through the co-op, Eadon realized at least \$1,000 additional.

West Coast Lumbermen's Association, put it this way:

"We are here tonight to welcome to this growing fraternity of tree farmers the real dirt farmers of Snohomish County. We, speaking of the industry, are ready to welcome *every* tree farmer, down even to one acre."



Tree farmer's identification: Top, right—framed certificate showing his forest lands have been designated as a West Coast Tree Farm. Top, left—property line sign to encourage fire prevention. Bottom—large signboard for posting property as tree farm.

And George L. Drake, logging company manager, of Shelton, and past president of the Western Forestry Conservation Association:

"Nowhere have I seen a more practical approach to farm forestry. What the companies want is a continuous forest crop. The industry knows that in the future it is going to be looking to individual farmers, because there always will be a substantial percentage of our timber products that come from private farm woods. We feel that the small owner can have a real part in the future of the industry; you small timber owners are tremendously important."

Pacific Coast Regional Conservator J. H. Christ, Portland, told the meeting:

"This meeting demonstrates a growing appreciation, or recognition, of the value of land. We are here talking over what we are going to do to see that our communities continue to thrive, that our lands are going to produce the best returns we can get from them, whether from timber or other crops. It is an inspiration to be here with these tree farmers, who are harvesting and marketing their timber 'crop' under sustained-yield methods. That way, they will continue to have timber to cut, and at the same time be keeping their land in its safest and actually most profitable use."

Assistant Regional Forester Charles L. Tebbe of the U. S. Forest Service, Portland, pointed out that a high percentage of the commercial timberland in western Washington and Oregon is in ownerships of from a few acres to fewer than

5,000 acres, with relatively few professional foresters to service them. He saw in the tree-farms movement the possibility that added facilities of private foresters may be brought into use.

Up until this certification, interest in the national tree-farms movement, which is a method of good forest management on private lands, had been confined largely to commercial forest farmers or large-scale owners and operators solely engaged in growing trees and harvesting lumber. Originators of the tree-farms idea in 1941 and sponsors of the American Tree Farms System in western Washington and Oregon are the West Coast Lumbermen's Association and the Pacific Northwest Loggers Association. Through their Joint Committee on Forest Conservation, these associations direct the certification program and pass upon applications in this vast Douglas fir region—which exceeds even the Southern pines area in potential growth rate.

Standards for tree-farms certification are high. The timber owner agrees to maintain his designated land for the production of forest crops, to provide reasonable protection from fire, insects, disease and damage from excessive grazing, to harvest the timber in a manner that will assure future crops, and to furnish information periodically on his progress, future plans and improvements in protection or cutting practices. These Snohomish County farmers also were able to qualify because of having the technical services of recognized foresters available through the soil conservation district.

Snohomish County Forestry Cooperative farmers already have been running their farm woodlands just that way. Good timber cropping is nothing new to this group of back-40 Paul Bunyans, who consider it simply good business. Their intensive management of farm woodlands began in an organized way in 1938, with the technical assistance of Soil Conservation Service foresters. Through the Service's demonstration program, they learned what could be done on lands unsuited for cropping or pasture or on lands dedicated to other kinds of forest production.

As a result of stimulated popular interest in tree farming as a permanent income source, 45 tree-minded farmers in 1940 organized the forestry Co-op, the first one west of the Mississippi River. Their objectives have been adhered to through almost 5 years of business operation. Their crop has been the junior forest of today—the stands of second-growth Douglas fir on hillsides, red alder in creek bottoms, cottonwoods along stream-banks, western red cedar in shady dells, and cas-

cara along fence rows.

The cooperative is made up of practical farmers—80 of them now. Business-wise and woodcanny, Manager Lester J. Sims of Sultan, a tree farmer himself, has found favorable markets, shopped for the best prices, supervised the woods operations and kept things moving in systematic fashion. Wartime, for example, has supplied ready markets, but it also has created problems of labor and other handicaps described by Co-op President M. C. James of Arlington, as the toughest since after the Civil War. Nevertheless, in 1944, the co-op sent 35 thousand lineal feet of piling and 400,000 board feet of sawlogs to the war markets. The association has maintained a gross business of about \$40,000 a year. Part of the members' dividends have been turned back and a 32-horsepower blade-equipped tractor and a portable "jammer" bought, with which forest roads are built and logs are dragged out of the woods and loaded. The equipment investment has been kept to a minimum, though, and the soundness of the co-op's financing is reflected in the fact that the members' assets in the organization far exceed its obligations. Best of all, a good job of forest conservation has been done.

Let the report of the inspecting forest engineer of the Joint Committee of Conservation attest to the kind of forestry practiced:

"The cuttings were inspected and they are the most intensive and best examples of forestry observed in the (Douglas fir) region. Stands are almost entirely second-growth. Windfalls, suppressed and defective trees and tops are worked up into fuel and similar products. High valued trees needed to fill an order are moved in accordance with the cutting plan. It resembles an improvement cutting, in that crowded trees are released and their growth accelerated. It is not necessarily a selection system. Where the stand and market indicate, clear cutting on small areas is practiced . . ."

The Snohomish Soil Conservation District develops conservation farm plans with co-op members, in which recommended land use is indicated, according to land use capabilities. These plans also have the forest areas typed out on aerial photos which offer a convenient reference source for woodland planning. General management assistance, including tree marking, is provided. Planting stock has been furnished some co-operators, and over-all educational assistance in farm forestry has been given. But sales negotiations between co-op members and buyers, marketing information and supervision of woods operations

are handled by the co-op itself, through Manager Sims.

James, president of the co-op since its organization and himself owner of 60 acres of fir and cedar, believes West Coast Tree Farms affiliation is an important step forward in farm forestry, because it publicly proclaims the importance of the small woodland in regional forest management plans.

"Working cooperatively and systematically, farmers constitute a well managed forest area of industrial significance," he said. "Our co-op membership alone includes about 10,000 acres of woodland, ranging in size from seven acres to 345 acres. You can readily see that if we do a good job of timber growing, our contribution to local wood using industries will be important."

"Though we haven't done anything very big, we have done something significant—proved that it is practicable and profitable to practice selective forest logging. About the biggest thing we've done is to make our members forest conscious."

The tree farmers receive signboards for posting their property as such, and smaller property lines signs requesting cooperation in fire protection to "Keep Washington Green." The certification also entitles the co-op to use the American

Tree Farms symbol in its office and on its stationery.

Thus, a new rural pattern in farm forestry is being established, identifying to the general public those forest owners who are practicing conscious and permanent management in growing timber. Every West Coast Tree Farm sign that is placed crystallizes forest progress in the Pacific Northwest and heightens public appreciation of a basic resource.

West Coast Tree Farms officials plan to extend certification to other qualifying farmers in the Douglas fir region. James hopes to see every member of the Washington Forest Products Cooperative Association a Tree Farms member eventually.

The 17 co-op farmers so far certified as Tree Farms members are:

Mayo Ball and John Enselman, Arlington; Duncan Barr, Monroe; William Bayh, Granite Falls; Mrs. Susan Gatheres, Arlington; George Hjort, Arlington; President James; W. R. Millard, Granite Falls; Mrs. Quincy Mueller, Granite Falls; Luther Orr, Arlington; R. O. Roesiger, Snohomish; J. E. Saunier, Granite Falls; William H. Sheeler, Sultan; Manager Sims; Secretary John Spada, Snohomish; Jasper Storm, Sultan; S. A. Sweeney, Woodinville; and John Westin, Arlington.

RAISING THE FERTILITY LEVEL

By B. H. HENDRICKSON

There is no doubt that our soil is basically responsible for the low crop yields and low farm incomes in the Southern Piedmont and the South in general. The causes are well known—too much row cropping, too active erosion, and serious depletion of farmlands that were not of the highly-productive type when first cleared, as compared with the better agricultural soils of the United States.

We have found it necessary to use commercial fertilizers in substantial amounts to supply plant food for crops. Usually, it is the money crops that receive the bulk of the fertilizer. We are prone to prepare our seedbeds with considerable care for the next crop to be grown, without giving much thought to raising the fertility level of the farm as a whole. But, as Benjamin Franklin wrote in "Poor Richard's Almanac," "A deposit of fertility in the soil bank is the safest, and pays the best."

EDITOR'S NOTE.—The author is project supervisor, Southern Piedmont Conservation Experiment Station, Soil Conservation Service, Watkinsville, Ga.

We have the option of making our farms more fertile and more profitable, since most of our soils respond readily and profitably to good treatment and proper land use.

In practical farming, this means using all methods that will provide a good margin of profit and at the same time protect and improve the soil. These methods need to do more than just check erosion wastage, and depletion of soil organic matter. They must also maintain a supply of essential minerals in the soil, in order to "make a deposit of fertility in the soil bank." New conservation farming methods that accomplish these results are now coming into general use.

The rate of erosion wastage of farmland soils varies widely, depending principally on the degree and length of slope, and on the type of crop cover. By actual measurement, annual erosion losses even from the intervals between terraces on moderate to steep eroded slopes planted continuously to cotton amounts to 30 to 50 tons per acre per year. These tonnages happen to be the minimum and maximum freight car load capacities of our

railroads. We can hardly expect to maintain a productive agriculture if our cropland continues to suffer a freightcar load of soil loss per acre per year. But we now know how to reduce such tremendous soil losses.

Good cropland management for the Southeast should include terracing with meadow outlets where needed, and always feature crops and cultural methods that effectively check erosion. A recent trend is the more general use of close growing legume crops that provide nutritious forage for livestock, reduce soil losses, and leave residues on the land to increase the supply of soil organic matter. A better understanding of the mineral needs of crops makes it possible to produce products of higher food value, resulting in healthier livestock, and healthier people.

There are other worthwhile advantages in the use of conservation-type cropping methods. Increasing the soil organic matter supply makes the soil more retentive of rainfall and of plant food minerals which in turn tend to increase production and generally improve the quality of the crop. The soil has become a safer storehouse for soil moisture and plant nutrients, and improved efficiency in the use of fertilizers is possible.

When we check closely, as we should, the degree of fundamental soil improvement actually accomplished by treatments we notice that progress is likely to be slow even though crop yields increase sharply. For example, experiments have shown that additions of organic matter to the soil effected by close-growing legumes and their residues, or by leguminous green manures and composts, are to some extent used up by the row crops that follow in rotations. The more residue-producing, close-growing legumes such as annual lespedeza or other organic additions in the rotation and the less row-cropping, the larger will be the accumulation of the net organic matter in the soil, and the more substantial the increase of fertility in "the soil bank."

It is fortunate that conservation-type cropping methods are capable of improving the soil rapidly where improvement is most needed, as on eroded slopes planted to kudzu and sericea lespedeza. These crops are capable of establishing complete coverage on depleted eroded land, low in plant food, and of raising rapidly the organic matter content of the soil. On average land, this amounts to as much as 4 tons per acre per year. Ample fertilization to maintain heavy production is absolutely necessary and highly profitable. The way to make substantial progress in soil improvement

is clear. It means better land use. For croplands, on most farms, it means confining row crops to far as practicable level or gently-sloping land, rotating them with crops like crotalaria and winter legumes to supply organic matter. Row crops should occur less often, and always in protective-type rotation with brass or legumes, on eroding slopes. The close-growing summer legumes fit into the rotation best, as they very effectively check erosion during the summer months when three-fourths of the annual soil loss occurs. Erosion is too active on most steep slopes to permit growing row crops without heavy soil loss.

In principle, then, adjusting cropping methods to cropland conditions in the Southeast appears to be largely a matter of increasing the proportion of land in close-growing summer legumes in the rotation as slopes become more steep and topsoil becomes thinner, fertilizing properly to aid in increasing fertility and keeping everlastingly at it, to hold the gains.

Conserving "a deposit of fertility in the soil bank" will be safest, and pay best, during the years to come. To accomplish this will take time as abrupt changes are impractical, on the average farm. Nor can we afford to do the reverse, and allow erosion and depletion to continue at a rapid pace, and further damage our soil resources.

The job calls for intelligent planning to provide gradual adjustment of farm lay-outs of field, pasture and woodland for crop production and livestock. The aim is to maintain and improve farm income and at the same time assure progress towards a sustaining soil.

MEET JIM SKINNER OF MICHIGAN

(Continued from page 239)

operating farmers at \$199,076.57 about \$1,000 per farm. The values range from 10 cents a tree for 631,130 trees planted, to \$3 an acre for 3,412 acres of contouring, to \$10 an acre for 426 acres terraced and 3,570 acres seeded to grass, to \$80 an acre for 206 acres of muck developed for cropland.

Jim Skinner's message to farmers in soil conservation districts all over the country is: "The future of the agriculture of America is in your hands. Don't neglect it."

Walter W. John

Lord Northbourne writes: "Good cultivation is always beautiful, but most of us have a taste for wildness as well. It is pleasant that the best cultivation of all should be that which is not without its touch of wildness."

A NEW COVER CROP FOR VINEYARDS

By HOMER E. STENNETT

There are probably few places in our country where soil erosion is a greater problem than in the vineyards of the New York Finger Lakes region. The cause is easily explained. The controls are often more difficult. Most of the land near the lakes occurs on long, steep slopes. Erosion is further increased by the clean cultivation considered necessary during spring and early summer.

The life of a vineyard is long, as long as 100 years or more on good sites, so that few new vineyards need be planted to maintain present acreage. Most of the vineyards were planted without regard to contour and much of the original organic matter has been lost.

The first vineyard known in the Finger Lakes region was planted in 1830 by the Reverend William Bostwick in Hammondsport, N. Y., at the head of Lake Keuka. This venture proved successful and soon other vineyards were being planted. Only table grapes were grown at first and these were limited by the slow transportation facilities then available to take the perishable fruit to market.

It was soon learned that the grapes grown in this region were particularly high in sugar content and equal in quality to the wine grapes of France. This, of course, is still a subject for mild debate between American and French producers. Nevertheless, a wine industry developed which solved the transportation problem and proved a great impetus to the planting of vineyards in New York State. Vines more hardy than the first imported varieties presently were developed by crossing with the American fox grape.

Grape production proved highly profitable, and vineyards were planted more and more extensively. The fairly well-drained soils near the lakes were ideal for this form of husbandry. There, the long slopes with a large volume of water at the base causes excellent air drainage, which lengthens the growing season. The air movement also facilitates rapid drying of dew and rain from the leaves, and thus helps to give comparative freedom from disease.

It has long been recognized that a winter cover crop is needed which will take over after cultivation ceases in summer. Many of the conventional

cover crops have been tried, but with dubious success. Vineyardists in general have rejected them all for one reason or another, although domestic rye grass has been used successfully in some instances.

There is one plant, however, a common weed, which shows considerable promise of being just what is needed. Chickweed (*Stellaria media*), is gaining favor among many vineyardists after years of ignoring or fighting it.

Frequent observations of this plant as a cover crop, over the last two years, have brought to light many of its characteristics. All the chickweed observed was from natural seedings. Its growth is spotty, due possibly to frequent plowing which turns seed under too deeply. Sometimes large sections of a vineyard will be deeply carpeted while other sections nearby are bare.

Chickweed is a winter annual which produces seed continuously from about October 1 until the end of its life cycle. Ripened or partially ripened seeds can be found on the plant during that whole period. At the time of the first cultivation in the spring a large amount of seed will have been produced. This seed is long lived and may be in the ground for years before germinating. Although the seed is produced abundantly, it is difficult to harvest because it is very small and grows close to the ground. This close-growing habit also prevents the spread of the seed.

Good soil favors chickweed, but it will grow, albeit less luxuriantly, on poor soil, especially if encouraged by an application of manure. Single plants growing alone have been observed which closely cover a space of ground one foot across.

After cultivation ends about the middle of July the chickweed begins to grow. By late September the ground is covered with a blanket of green. This cover remains green all winter. Soil with a cover of chickweed is mellow and easily plowed, in contrast to bare soil. This is the characteristic most often commented on by farmers.

This plant has much the same growing habit as Korean lespedeza, although it is hardier. Possibly here is another weed which eventually may be admitted to the ever-growing family of plants useful to man.

Have you seen the new 500-page, illustrated War Department Education Manual EM 800, "What is Farming?" Several chapters were by SCS members, W. R. Van Dersal and E. H. Graham.

EDITOR'S NOTE.—The author is assistant state conservationist, Soil Conservation Service, Watkins Glen, N. Y.

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